

REMARKS

Applicants respectfully request consideration of the subject application as amended herein. This Amendment is submitted in response to the Office Action mailed September 22, 2004. Claims 1-12 are rejected. Claims 3, 4, 5, and 6 have been amended. Claims 27-37 have been added. No new matter has been added by this Amendment.

35 U.S.C. §102(b)

Claim 1 is rejected under 35 U.S.C. §102(b) as being anticipated by Suzuki (U.S. Patent No. 6,232,638, hereinafter “Suzuki ‘638”).

Applicant respectfully disagrees. As can be seen from Suzuki ‘638, the recess (216) of Suzuki ‘638 is formed between TWO ISOLATION REGIONS and NOT between an emitter stack and a first isolation structure as recited in Applicant’s claim 1. As recited in Applicant’s claim 1, the process includes forming an emitter stack between the first and second isolation structures; and in the substrate, forming a self-aligned recess between the emitter stack and the first isolation structure. As taught by Applicant, the self-aligned recess is formed using, for example, an etching process that is carried out through mask 136 between the emitter polysilicon 128 and first STI 116 to form a self-aligned recess 138 in substrate 112. (See Specification, page 6, lines 16-20). Furthermore, in the present example, the hard mask 134 acts as a self-aligning agent on one edge of the self-aligned recess 138. (See Specification, page 6, lines 16-20). This was not taught, disclosed, or even suggested by Suzuki ‘638.

Applicant respectfully emphasizes that Suzuki ‘638 does not teach a self-aligned recess disposed between the emitter stack and the first isolation structure. The only thing in

Suzuki ‘638 that can even be said to be similar to the recess is the collector trench 116 or 216 (Figures 1 and 4a and Figures 7-9). As can be seen from Suzuki ‘638, the trench 116/216 is physically separated from the emitter stack by a dielectric region, the isolation oxide region 102 or 202. Thus, contrary to the Examiner’s misunderstanding, the trench is not disposed between the emitter stack and the first isolation structure as claimed in Applicant’s claim 1.

Additionally, in Applicant’s claim 1, the trench, or recess 138, is flushed against the emitter and is not separated from the emitter by the isolation structure. The recess 138 is formed adjacent to the emitter stack as can be seen from the Figures. In fact, the recess 138 is placed between the emitter stack and the first isolation structure. See for example, Figures 3-5 of Applicant’s disclosure. The recess 138 is thus self-aligned (or automatically aligned) with the emitter stack. In Suzuki ‘638, there is no such self-aligned recess and furthermore, the collector trench 116 is separated from the emitter stack by the isolation oxide region 102 and is thus not self-aligned. An advantage of Applicant’s feature as claimed in claim 1 is that the device can be made smaller with lower resistance as discussed in Applicant’s disclosure, for example, on page 9 beginning with line 4.

Therefore, Suzuki ‘638 cannot anticipate claim 1.

With respect to the newly added claims 27-37, the same discussion above applies and further, as recited in the claims 27-37, a mask that is used to form the emitter stack acts as a self-aligning agent on one edge of the self-aligned recess. This feature is not taught, disclosed, or suggested by Suzuki ‘638. Applicant thus submits that claims 27-37 are not anticipated by Suzuki ‘638.

35 U.S.C. §103(a)

Claims 2-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Suzuki

for obviousness reason.

Applicant respectfully disagrees for the same reason stated in the above discussion.

As discussed above, Suzuki '638 does not teach a self-aligned recess disposed between the emitter stack and the first isolation structure. Suzuki's recess is between two isolation regions. Thus, even if one of ordinary skill in the art would have formed the bipolar junction transistor and/or the emitter stack as described in claims 7-11, one would have not thought of forming the self-aligned recess between the emitter stack and the first isolation structure. Therefore, Suzuki '638 does not make obvious Applicant's claims 1-26 and 27-37.

As discussed above, the pending claims are patentable over the above reference.

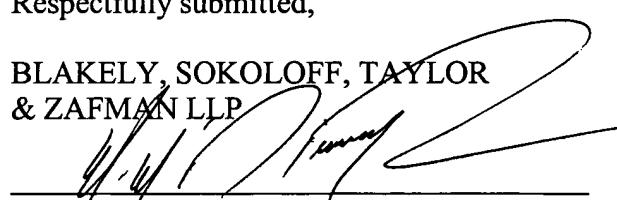
If the Examiner determines the prompt allowance of these claims could be facilitated by a telephone conference, the Examiner is invited to contact Mimi Dao at (408) 720-8300.

DEPOSIT ACCOUNT AUTHORIZATION

Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Applicant hereby requests such extension.

Respectfully submitted,

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